Claims

1. Computer-controlled conveyor system, in particular a shelf-stacking device (1), comprising a vertical mast (7) which can be moved horizontally by means of a bogie assembly (9), a lifting platform (5) which can be guided vertically on the former and displaced vertically by means of a first lifting drive (14), and a holding table (6), which can be vertically raised and lowered relative to it by means of a second lifting drive (22, 22') and has a depositing area on which at least one storage aid (30) can be deposited lying exclusively in one plane, and a load bearing mechanism (32) is disposed on the lifting platform (5) for stowing and retrieving storage aids (30), such as containers, boxes and similar, in and out of a shelf compartment of a shelving system and having a depositing area on which at least one storage aid (30) can be deposited lying exclusively in one plane, and the lifting platform (5) and holding table (6) are disposed one above the other, wherein the load bearing mechanism (32) comprises two parallel telescopic pushing arms (33) lying adjacent to one another which can be moved synchronously towards one another and apart from one another to a limited degree by the distance of a displacement path (52) by means of a displacement drive, and which can be extracted in the direction of the shelf compartment for stowing and retrieving the storage aid (30), and the holding table (6) has a lifting frame (46) with an external contour approximately matching the external contour of the lifting platform (5) in which at least one orifice (47) is formed, and this orifice (47) has a first main dimension (48) parallel with the longitudinal extension of the telescopic pushing arms (33) which is slightly longer than the maximum length (49) of each of the telescopic pushing arms (33) retracted towards the lifting platform (5) and a second main dimension (50) perpendicular to the longitudinal extension of the telescopic pushing arms (33) which is longer than the sum of the maximum widths (51) of the telescopic pushing arms (33) retracted towards the lifting platform (5) plus the maximum displacement path (52) of each telescopic pushing arm (33), and the holding table (6) can be moved by means of the second lifting drive (22, 22') from the transfer or handover position flush with a horizontal support surface (31) of the lifting platform (5) or lowered to below the support surface (31) of the lifting platform (5) into the conveying position above and beyond the support surface (31), and is mounted on at least one linear guide extending parallel with the mast (7), and when the holding table (6) is in the transfer or handover position, the two telescopic pushing arms (33) extend respectively through the orifice (47).

2. Computer-controlled conveyor system according to claim 1, wherein a remaining, approximately U-shaped or frame-shaped peripheral web of the lifting frame (46) forms the depositing area and the storage aid (30) is supported on freely projecting support arms (70) disposed one after the other in the extraction direction of the telescopic pushing arms (33).

3. Computer-controlled conveyor system according to claim 1, wherein two parallel, approximately rectangular orifices (47) are formed in a lifting frame (46) in oppositely lying peripheral regions transversely to the longitudinal extension of the telescopic pushing arms (33), and each orifice (47) has a first main dimension (48) parallel with the longitudinal extension of the telescopic pushing arms (33) which is slightly longer than the maximum length (49) of each telescopic pushing arm (33) retracted towards the lifting platform (5), and has a second main dimension (50) perpendicular to the longitudinal extension of the telescopic pushing arms (33) which is longer than the maximum width (51) of each telescopic pushing arm (33) retracted towards the lifting platform (5) plus a maximum displacement path (52) of each telescopic pushing arm (33), and when the holding table (6) is in the transfer or handover position, a telescopic pushing arm (33) extends respectively through the orifices (47).

4. Computer-controlled conveyor system according to claim 1, wherein the telescopic pushing arms (33), in particular the support frame (34), are mounted on the lifting platform (5) by means of at least two linear guides (38) extending perpendicular to their longitudinal extension and spaced at a distance apart in their extraction direction and are respectively coupled with the displacement drive.

5. Computer-controlled conveyor system, in particular a shelf-stacking device (1), comprising at least one bogie assembly (9) which is able to travel horizontally alongside a vertical mast (7), a lifting platform (5) which can be guided vertically on the latter and displaced vertically by means of a first lifting drive (14), and a holding table (6) which can be vertically raised and lowered relative to it by means of a second lifting drive (22, 22') and has a depositing area on which at least one storage aid (30) can be deposited, and a load bearing mechanism (32) is disposed on the lifting platform (5) for stowing and retrieving storage aids (30), such as containers, boxes and similar, in and out of a shelf compartment of a shelving system, and having a depositing area on which at least one storage aid (30)

can be deposited lying exclusively in one plane, and the lifting platform (5) and holding table (6) are disposed one above the other, wherein the second lifting drive (22, 22') for the holding table (6) comprising a drive motor (25, 25'), a driving means and a driver engaging in it in a positive and/or frictional connection is disposed separately from the lifting platform (5), and a vertical travel path (44) of the holding table (6) towards the lifting platform (5) essentially corresponds to the maximum height of the at least one storage aid (30) which can be deposited on the lifting platform (5) lying in one plane and/or the load bearing mechanism (32), holding table (6) and lifting frame (46) are designed as claimed in one of claims 1 to 4.

6. Computer-controlled conveyor system according to claim 5, wherein the drive means is disposed on the holding table (6) and the driver on the mast (7).

7. Computer-controlled conveyor system according to claim 5, wherein the drive means is disposed on the mast (7) and the driver on the holding table (6).

8. Computer-controlled conveyor system according to one of claims 1 to 7, wherein the drive means is provided in the form of at least one driven driving gear (23, 23'), such as a friction gear, toothed gear or toothed disc.

9. Computer-controlled conveyor system according to one of claims 1 to 7, wherein the driver is provided in the form of at least one traction means (19; 26; 64), such as a belt, chain or cable and similar, of the first lifting, second lifting or auxiliary drive (14; 22; 61) or at least one toothed rack mounted on the holding table (6) or mast (7) between a mast base (8) and a mast head (15) or at least one stationary tensed traction means mounted on the mast (7) between a mast base (8) and a mast head (15), such as a cogged belt or chain.

10. Computer-controlled conveyor system according to claim 5, wherein the drive motor (25') of the second lifting drive (22') is disposed on the holding table (6).

11. Computer-controlled conveyor system according to claim 5, wherein the drive motor (25) of the second lifting drive (14) is disposed on a bogie assembly (9) of the conveyor system or on the mast (7).

12. Computer-controlled conveyor system according to claim 1 or 5, wherein the holding table (6) co-operates with a respective end-position limit switch (57) on a level with its transfer or handover position and with the conveying position, and when the transfer or handover position or conveying position is reached, the drive motor (25; 25') of the second lifting drive (22; 22') can be switched off by means of the end-position limit switches (57).

13. Computer-controlled conveyor system according to one of claims 1 to 12, wherein the second lifting drive (22) comprises a driving gear (23) disposed in the region of the mast base (8), a guide pulley (24) disposed in the region of the mast head (15) and a traction means (26) guided by the drive and guide pulley (23, 24), connected to the holding table (6), which can be driven by means of a second drive motor (25).

14. Computer-controlled conveyor system according to claim 1 or 5, wherein the drive motor (25, 25') for the holding table (6) and the drive motor (18) for the lifting platform (5) can be actuated independently of one another.

15. Computer-controlled conveyor system according to claim 1 or 5, wherein the drive motor (25, 25') for the holding table (6) and the drive motor (18) for the lifting platform (5) are synchronized, in particular electrically and/or mechanically coupled.

16. Computer-controlled conveyor system according to one of claims 1 to 12, wherein the holding table (6) can be locked in its conveying position and/or transfer or handover position by means of a holding brake, in particular an electromagnetic magnetically operated brake.

17. Computer-controlled conveyor system according to one of claims 1 to 12, wherein the lifting platform (5) can be locked in its set relative position on the mast (7) by means of a holding brake, in particular an electromagnetic magnetically operated brake.

18. Computer-controlled conveyor system according to claim 16 or 17, wherein the drive motor (25, 25') for the holding table (6) and/or the drive motor (18) for the lifting platform (5) is provided with the holding brake.

19. Computer-controlled conveyor system according to one of claims 1 to 18, wherein the first lifting drive (14) comprises a first driving gear (16) disposed in the region of the mast base (8), a first guide pulley (17) disposed in the region of the mast head (15) and a first traction means (19) guided by means of the drive and guide pulley (16, 17), connected to the lifting platform (5), and which can be driven by means of a first drive motor (18), and a second driving gear (23') is mounted on the holding table (6) so as to be rotatable and has second guide pulleys (56) at its two sides, and the traction means (19) is guided by means of the second driving gear (23') and the second guide pulley (56).

20. Computer-controlled conveyor system according to claim 19, wherein the traction means (19) loops round the second driving gear (23') by at least 180°.

21. Computer-controlled conveyor system according to one of claims 1 to 18, wherein the first lifting drive (14) comprises a first driving gear (16) disposed in the region of the mast base (8), a first guide pulley (17) disposed in the region of the mast head (15) and a first traction means (19) guided by means of the drive and guide pulley (16, 17), connected to the lifting platform (5), and which cam be driven by means of a drive motor (18), and an auxiliary drive (61) is provided on the mast (7) , which comprises a second driving gear (62) disposed in the region of the mast base (8), a second guide pulley (63) disposed in the region of the mast head (15) and an endless, second traction means (64) which is guided by means of the drive and guide pulley (62, 63) and can be driven by means of the first drive motor (18), and a third driving gear (23') is mounted on the holding table (6) so as to be rotatable and has third guide pulleys (56) at its two sides, and the second traction means (64) is guided by means of the third driving gear (23') and the third guide pulleys (56).

22. Computer-controlled conveyor system according to one of claims 1 to 19, wherein the linear guide (58) extends parallel with the mast (7) between the holding table (6) and the lifting platform (5).

23. Computer-controlled conveyor system according to one of claims 1 to 19, wherein the linear guide is disposed on the mast (7) extending parallel with the mast (7) and the holding table (6) is guided on the linear guide on the mast (7) by means of guide elements (20, 21).

24. Computer-controlled conveyor system according to claim 23, wherein the mast (7) has at least one guide track (13) along which the lifting platform (5) is guided, and the linear guide is formed by the at least one guide track (13).

25. Computer-controlled conveyor system according to claim 1 or 5, wherein the lifting frame (46) is of a plate-shaped design and essentially overlaps with the entire surface of the lifting platform (5).

26. Computer-controlled conveyor system according to claim 1 or 5, wherein the holding table (6) also has a lifting grill (53) in addition to the lifting frame (46).

27. Computer-controlled conveyor system according to claim 26, wherein the holding table (6) is of a single-piece design and its lifting frame (46) and lifting grill (53) are rigidly connected to one another.

28. Computer-controlled conveyor system according to claim 26, wherein the holding table (6) is of a multi-part design and its lifting frame (46) and lifting grill (53) are connected to one another by means of coupling mechanisms (68) disposed between them, each with two mutually engaging but releasable coupling parts (73, 74).

29. Computer-controlled conveyor system according to one of claims 26 to 28, wherein the lifting grill (53) is of an approximately rectangular shape and comprises a peripheral frame and parallel support bars (55) disposed adjacent to one another in one plane at a distance apart between two frame parts in the extraction direction of the telescopic pushing arms (33).

30. Computer-controlled conveyor system according to one of claims 26 to 28, wherein the lifting frame (46) is formed by a peripherally extending frame and the lifting grill (53) is disposed inside this frame, and the orifices (47) are bounded by the lifting grill (53), in particular the outermost support bars (55), on mutually facing sides.

31. Computer-controlled conveyor system according to one of claims 1 to 29, wherein the lifting frame (46) has two freely projecting support arms (70) between which the lifting

grill (53) is disposed, and the lifting grill (53) with its outermost support bars (55) bounds the orifices (47) separated from one another by the lifting grill (53) on mutually facing sides and incorporates the depositing area for the storage aid (30).

32. Computer-controlled conveyor system according to one of claims 1 to 29, wherein the lifting grill (53) forms one or both orifices (47), and its respectively adjacent support bars (55) and part-sections of its peripherally extending frame bound the orifices (47) on all sides.

33. Computer-controlled conveyor system according to claim 1, 5 or 29, wherein a support frame (40) incorporating the horizontal support surface (31) formed by it for the storage aid (30) is disposed on the lifting platform (5) and comprises several parallel support surfaces (41) lying in a single plane spaced at a distance apart, which form the depositing area, and the distance between adjacent support surfaces (41) is slightly bigger than the width of the support bars (55).

34. Computer-controlled conveyor system according to claim 1 or 5, wherein a longitudinal conveyor system (66) is disposed between the two telescopic pushing arms (33) extending parallel with their longitudinal extension, comprising at least one endless conveyor (67) and forming the support surface (31).

35. Computer-controlled conveyor system according to claim 1 or 5, wherein the mast (7) is guided by means of a bogie assembly (9) disposed on the mast base (8) and/or mast head (15) along a bottom and/or top drive track (4).

36. Computer-controlled conveyor system according to claim 1 or 5, wherein the lifting platform (5) and holding table (6) can be positioned relative to a stowage or retrieval point in the upstream zone at the end of a shelf aisle (2) for the conveyor system, and the lifting platform (5) is retained in a desired position pre-defined by a computer system, and the holding table (6) is retained at a fixed distance relative to the lifting platform (5), and a filling and pick-up system disposed in the upstream zone co-operates with the first storage aid (30) deposited on the holding table (6), and the load bearing mechanism (32) co-operates with the second storage aid (30) deposited on the lifting platform (5).